

BMAT100N	Mathematics	L	T	P	C
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Pre-requisite	NIL	Syllabus Version			
		1.0			
Course Objectives					
The course is aimed at providing					
1. Necessary and relevant background to understand the other important engineering mathematics courses.					
2. Basic knowledge for the non-mathematics students to learn further topics and apply it in solving real-world engineering problems.					
Course Outcomes					
At the end of the course the student should be able to					
1. Solve a system of linear equations by matrix method.					
2. Apply the techniques of differentiation to find maxima and minima, and techniques of integration to evaluate areas and volumes of revolution.					
3. Understand the concept of ordinary differential equations, and first and second order linear differential equations.					
4. Have a clear understanding of analytic geometry and vector algebra.					
5. Apply concepts of mathematical logic and elementary probability to real life problems.					
Module:1	Matrices	5 hours +3 hours			
Matrices - types of matrices - operations on matrices - determinants - adjoint matrix – inverse of a matrix - solution of a system of linear equations by inversion method – elementary transformations – rank of a matrix - consistency and inconsistency of system of equations.					
Module:2	Differential Calculus	6 hours + 2 hours			
Differentiation of functions of single variable – differentiation techniques physical interpretations - differentiation of implicit functions – higher order derivatives – Taylor's, Maclaurin's series - maxima and minima of functions of a single variable.					
Module:3	Integral Calculus	6 hours + 2 hours			
Techniques of integration - integration by parts- Partial fractions - definite integrals – properties- evaluation of area and volume by integration.					
Module:4	Linear Ordinary Differential Equations	6 hours + 2 hours			
Differential equations-definition and examples- formation of differential equation- solving differential equations of first order - solving second order homogenous differential equations with constant coefficients.					
Module:5	Analytic geometry	5 hours + 2 hours			
Analytic geometry of three dimensions - direction cosines and direction ratios - plane, straight line and sphere, distance between points, distance to a plane.					

Module:6	Vector Algebra	7 hours + 2hours
Vectors—operations on vectors-angle between two vectors-projection of one vector on another vector –equations of plane, straight line and sphere in vector forms-shortest distance between two skew lines - equation of a tangent plane to a sphere		
Module:7	Logic and Probability	8 hours + 2 hours
Mathematical logic – propositions – truth table – connectives– tautology – contradiction. Permutations and combinations – probability – classical approach – addition law - conditional probability - multiplicative law - Bayes' theorem and applications		
Module:8	Contemporary Issues	2 hours
Industry Expert Lecture and R& D lecture		
	Total Lecture hours:	45 hours
	Total Tutorial hours :	15 hours
Text Book(s)		
1. Engineering Mathematics, K. A. Stroud and Dexter J. Booth, 7 th Edition, Palgrave Macmillan (2013).		
Reference Books		
1. B.S. Grewal, Higher Engineering Mathematics, 2020, 44th Edition, Khanna Publishers		
2. S. Lipschutz and M. Lipson, Discrete Mathematics, 6 th Edition, Tata McGraw -Hill (2017).		
3. S. Lipschutz and J. Schiller Introduction to Probability and Statistics, , 3 rd Indian Edition, Tata McGraw -Hill (2017).		
Mode of Evaluation		
Digital Assignments (Solutions by using soft skill), Quiz, Continuous Assessments, Final Assessment Test		
Recommended by Board of Studies	24.06.2021	
Approved by Academic Council	No.:63	Date 23.09.2021